

WE CLAIM:

1. An apparatus for dispensing food articles to a food article receiving container, comprising:

a first hopper defining a first primary food article storage location configured to hold the food articles;

a first accumulator defining a first accumulator food article storage location positioned adjacent to the first hopper so as to receive food articles held in the first primary storage location, wherein the food articles move from the first accumulator food article storage location to the food article receiving container, the food article receiving container being located generally beneath the first accumulator; and

a cooling device configured to maintain a predetermined temperature range in the first primary food article storage location.

2. The apparatus of claim 1, further comprising a load/weight sensing/measuring assembly configured to weigh the food articles in the first primary food article location and generate a weighed signal.

3. The apparatus of claim 2, wherein the load/weight sensing/measuring assembly determines the weight of the food articles moving from the first primary food article storage location to the first accumulator food article storage location by continuously weighing the food articles in the primary food article location as the food articles are being dispensed out of the first primary food article storage location.

4. The apparatus of claim 1, further comprising a rotatable, reversible drum for controllably transferring the food articles from the first primary food article storage location to the first accumulator food article storage location in response to a first control signal.

5. The apparatus of claim 4, further comprising an accumulator door for controllably dispensing the food articles from the first accumulator food article storage location to the food article receiving container in response to a second control signal.

6. The apparatus of claim 5, further comprising a controller for receiving a dispense signal and generating the first control signal for the reversible drum and the second control signal for the accumulator door.

7. The apparatus of claim 6, wherein the dispense signal is generated when the food article receiving container is aligned in a loading position beneath the accumulator.

8. The apparatus of claim 1, further comprising a second hopper defining a second primary food article storage location configured to hold the food articles, and a second accumulator defining a second accumulator food article storage location positioned adjacent to the second hopper so as to receive food articles held in the second primary storage location, wherein the food articles move from the second accumulator food article storage location to the food article receiving container, the food article receiving container being located generally beneath the second accumulator.

9. The apparatus of claim 1, wherein the cooling device is further configured to maintain the predetermined temperature range in the first accumulator food article storage location.

10. The apparatus of claim 9, wherein the predetermined temperature range is about 0°F to about 10°F.

11. The apparatus of claim 9, wherein the predetermined temperature range is less than about 20°F.

12. The apparatus of claim 9, wherein the predetermined temperature range is controlled to be maintained at a set point temperature.

13. The apparatus of claim 1, wherein the cooling device is a coldwall evaporator.

14. The apparatus of claim 1, further comprising a freezer cabinet defining a cavity that is configured to house the first accumulator and the first hopper, wherein the cooling device maintains a predetermined temperature in the freezer cabinet cavity.

15. The apparatus of claim 14, wherein the cavity includes an aperture through an exterior wall of the freezer cabinet and the first accumulator extends through the aperture, the aperture being sized and configured to mate with the first accumulator to provide a substantially air-tight seal with the first accumulator.

16. The apparatus of claim 15, wherein the first accumulator includes an accumulator housing that defines the first accumulator food article storage location, and an accumulator door that is rotatable between an open position and a closed position.

17. The apparatus of claim 16, wherein the first accumulator provides a substantially air-tight seal between an outer surface of the accumulator housing and an aperture formed in an exterior wall of the freezer cabinet, and provides a substantially air-tight seal between an inner surface of the accumulator housing and the accumulator door when the accumulator door is in the closed position.

18. The apparatus of claim 8, wherein the cooling device is further configured to maintain the predetermined temperature range in the second primary food article storage location and the second accumulator food article storage location.

19. The apparatus of claim 14, wherein the freezer cabinet cavity is configured to further house the second primary food article storage location and the second accumulator food article storage location.

20. An apparatus for dispensing food articles to a food article receiving container, comprising:

a first hopper defining a first primary food article storage location configured to hold the food articles;

a first accumulator defining a first accumulator food article storage location positioned adjacent to the first hopper so as to receive food articles held in the first primary storage location, wherein the food articles move from the first accumulator food article storage location to the food article receiving container, the food article receiving container being located generally beneath the first accumulator; and

a load/weight sensing/measuring assembly configured to weigh the food articles in the first primary food article location and generate a weighed signal.

21. The apparatus of claim 20, wherein the load/weight sensing/measuring assembly determines the weight of the food articles moving from the first primary food article storage location to the first accumulator food article storage location by continuously weighing the food articles in the first primary food article storage location.

22. The apparatus of claim 20, further comprising a second hopper defining a second primary food article storage location configured to hold the food articles, and a second accumulator defining a second accumulator food article storage location positioned adjacent to the second hopper so as to receive food articles held in the second primary storage location, wherein the food articles move from the second accumulator food article storage location to the food article receiving container, the food article receiving container being located generally beneath the second accumulator.

23. The apparatus of claim 20, further comprising a mounting plate assembly and a hopper support assembly supported by the mounting plate assembly and configured to support the first hopper.

24. The apparatus of claim 23, wherein the hopper support assembly includes a load cell configured to determine the total weight of the food articles in the first primary food article storage location.

25. The apparatus of claim 23, wherein the mounting plate assembly includes a vertical support and a mounting bracket secured to the vertical support and movable vertically relative to the vertical support, and the hopper support assembly is supported by the mounting bracket.

26. The apparatus of claim 24, wherein the hopper support assembly is vertically movable relative to the mounting plate assembly, and the load cell is positioned between the mounting plate assembly and the hopper support assembly.

27. A method of dispensing food articles from a food dispensing unit to a food article receiving container, the dispensing unit including a primary food article storage location, an accumulator food article storage location having an accumulator door, and a weighing device, the method comprising the steps of:

- loading the articles into the primary food article storage location;
- weighing the food articles in the primary food article storage location;
- moving food articles from the primary food article storage location to the accumulator food article storage location;

- determining the weight of the moved food articles by calculating a difference between the weight of the food articles in the primary food article storage location before and after the food articles are moved into the accumulator food article storage location; and

- opening the accumulator door to dispense the food articles from the accumulator food article storage location to the food article receiving container.

28. The method of claim 27, wherein the opening step occurs after a target weight is reached and the food article receiving container is positioned beneath the accumulator food article storage location.

29. The method of claim 27, wherein the accumulator food article storage location is defined by an accumulator housing, and the method further includes the step of forming a substantially air-tight seal between the accumulator door and the accumulator housing when the accumulator door is in a closed position.

30. The method of claim 27, wherein the determining step includes continuous calculation of the difference in weight.

31. The method of claim 27, wherein the moving step includes rotating a drum positioned within the primary food article storage location.

32. The method of claim 27, wherein the dispensing unit further includes a hopper that defines the primary food article storage location, a hopper support assembly that supports the hopper, a load cell, and a cabinet that houses the hopper, hopper support assembly and load cell, and the weighing step includes determining the change in mass of the food articles within the primary food article storage location.

33. A method of dispensing food articles from a food dispensing unit to a food article receiving container, the dispensing unit including a primary food article storage location, an accumulator article storage location having an accumulator door positioned therein, and a cooling device, the method comprising the steps of:

loading the articles into the primary food article storage location;

maintaining a predetermined temperature range in the primary food article storage location with the cooling device;

moving food articles from the primary food article storage location to the accumulator food article storage location; and

opening the accumulator door to dispense the food articles from the accumulator food article storage location to the food article receiving container.

34. The method of claim 33, wherein the dispensing unit further includes a freezer cabinet that houses the primary food article storage location and the accumulator food article storage location, and the maintaining step includes maintaining the predetermined temperature range in the freezer cabinet.

35. The method of claim 33, wherein the predetermined temperature range is about 0°F to about 10°F.

36. The method of claim 33, wherein the opening step includes pivoting the accumulator door between a closed position and an open position.

37. The method of claim 34, wherein the maintaining step further includes providing a substantially air-tight seal between the accumulator door and the freezer cabinet.

38. An apparatus for dispensing food articles to a food article receiving container, comprising:

a hopper configured to hold the food articles;

an accumulator positioned adjacent to the hopper; and

a cooling device configured to maintain a predetermined temperature range in the hopper and the accumulator;

whereby the food articles are moved from the hopper to the accumulator storage location, and from the accumulator storage location to the food article receiving container.

39. The apparatus of claim 38, further comprising a weighing device configured to determine the weight of food articles in the hopper.

40. The apparatus of claim 38, wherein the load cell is further configured to determine the amount of food articles moved from the hopper to the accumulator by continuously monitoring the weight of food articles remaining in the hopper.

41. The apparatus of claim 38, further comprising first and second hoppers and first and second accumulators, and each hopper is configured to hold a different type of food article.

42. An apparatus for dispensing food articles to a food article receiving container, comprising:  
a hopper configured to hold the food articles;  
an accumulator positioned adjacent to the hopper and configured to receive food articles from the hopper and move the received food articles to the food article receiving container; and  
a weighing device configured to determine the weight of food articles held in the hopper and the weight of food articles moved from the hopper to the accumulator.

43. The apparatus of claim 42, wherein the weighing device includes portions of a hopper support assembly and portions of a mounting plate assembly.

44. The apparatus of claim 43, further comprising first and second hoppers and first and second accumulators, and each hopper is configured to hold a different type of food article.

45. An apparatus for dispensing food articles to a food article receiving container, comprising:  
a cabinet including a plurality of panels that define a substantially air-tight internal cavity and including an accumulator aperture formed in a bottom panel of the cabinet providing access to the internal cavity of the cabinet;



a hopper positioned in the internal cavity of the cabinet and configured to hold the food articles;

an accumulator at least partially positioned in the internal cavity of the cabinet at a location adjacent the hopper to receive food articles from the hopper and move the received food articles through the accumulator aperture to the food article receiving container, the accumulator being aligned with the accumulator aperture and configured to provide a substantially air-tight seal between the interior cavity of the cabinet and air outside the cabinet.

46. The apparatus of claim 45, wherein the substantially air-tight seal is provided by a substantially air-tight fit between an outer surface of the accumulator and that portion of the bottom panel defining the accumulator aperture.

47. The apparatus of claim 45, wherein the substantially air-tight seal is provided by a substantially air-tight fit between an inner surface of the accumulator and an accumulator door positioned within the accumulator.

48. The apparatus of claim 45, wherein at least one of the cabinet panels defines an access door that is movable between an open position in which the hopper is accessible for filling the hopper with food articles, and a closed position in which the access door forms an air-tight seal with the remaining cabinet panels.